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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,099	01/16/2004	Paul Marcius Butterfield	117435	4975
27074	7590	10/04/2007	EXAMINER	
OLIFF & BERRIDGE, PLC. P.O. BOX 19928 ALEXANDRIA, VA 22320			ZHU, RICHARD Z	
			ART UNIT	PAPER NUMBER
			2625	
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			10/04/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction27074@oliff.com
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Office Action Summary

Application No.

10/758,099

Applicant(s)

BUTTERFIELD ET AL.

Examiner

Richard Z. Zhu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 18 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Acknowledgement is made of applicant's amendment in response to the office action mailed on September 18th of 2007. The examiner notes that the applicant amends all the independent Claims.

Response to Applicant's Arguments

2. The applicant's arguments had been duly considered and the arguments are persuasive. The rejection under 35 USC 102 (b) is withdrawn and a new ground of rejection is made under 35 USC 103 (a) in view of applicant's amendment to the claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-5, 7-17, and 19-20 are rejected under 35 USC 103 (a) as being unpatentable over *Castelli et al. (US 5748221 A)* in view of *Hubble, III et al (US 6384918 B1)*.

Regarding Claim 1, *Castelli* discloses a method for detecting color misregistration (Col 3, Rows 24-27) in an image forming system (Col 3, Row 30) comprising:

Forming a registration patch with the image forming system (Col 6, Rows 65-67).

Performing spectrophotometric analysis on the registration patch (Col 3, Rows 34-40 and Col 6, Rows 61-63).

Determining if color misregistration has occurred based on the spectrophotometric analysis of the registration patch (**Col 7, Rows 2-10, the results of the mapping are verified and evaluated**).

Castelli does not disclose determining if color misregistration has occurred based on a detected color value detected by the spectrophotometric analysis of the registration patch.

Hubble discloses determining if color misregistration (**Fig 1, color misregistration being measured by a spectrophotometer 12**) has occurred based on a detected color value (**Col 17, Rows 1-14 and 39-44. Color values are measured in term of wavelength with metric unit of nano-meter whereas color spectrum runs from 400 nm which represent the color value of violet to 700 nm which represents the color value of red**) detected by a spectrophotometric analysis of a registration patch.

It would've been obvious to one of ordinary skill in the art at the time of the invention to use the spectrophotometer of *Hubble* as the primary sensor of *Castelli* whereas the motivation would've been to provide an improved spectrophotometer for non-contact measuring of the colors of colored target areas or test/registration patches (*Hubble*, **Abstract**).

Regarding Claim 2, *Castelli* discloses the step of forming a registration patch (**Col 6, Rows 65-67**) further comprising steps of:

Calculating or selecting a combined color value for the registration patch (**Col 6, Row 67 – Col 7, Row 2, colors are selected to adequately represent the printer's collection of colors**);

Forming the registration patch in a combination of colors having a composite color value equivalent to the calculated or selected value (**Col 6, Row 65 – Col 7, Row 2, the color patches are printed using colors that adequately represent the printer's collection of colors**).

Regarding Claim 3, *Castelli* discloses the method for detecting color misregistration further comprising generating an output signal in response to determining if color misregistration has occurred (**Col 3, Rows 38-40, a third detector that generates a signal indicative of a registration value between a plurality of color separations and see Col 7, Rows 2-9, a calibration is performed once misregistration is determined to have occurred**).

Regarding Claim 4, *Castelli* discloses that the output signal indicates whether the image forming system is performing within satisfactory limits (**Col 6, Rows 22-27, the results as indicated by the output signal is used to calibrate the printer of interest with the mapping to absolute or desired color coordinates**).

Regarding Claims 5 and 17, *Castelli* discloses the method for detecting color misregistration, performing spectrophotometric analysis and the spectrophotometric analysis further comprising:

scanning the registration patch with a spectrophotometric device (**Col6, Rows 17-30, and Row 61 – Col 7, Row 4**);

and obtaining a degree of color misregistration based on known dimensions of the registration patch and an amount of color shift between the color detected by the spectrophotometric device (**Col 6, Rows 39-55. In order for this invention to be enabled,**

i.e. to measure the relative positions of different color components, the system needs to be aware of the dimension of the patch so that it may know the range to properly direct the scanning, as demonstrated in Col 8, Rows 31-40) and the calculated or selected color value (Col 7, Rows 2-10, the results of the mapping between extracted image color data and selected color data are verified and evaluated).

Castelli does not disclose such process is on the basis of a color value.

Hubble discloses obtaining a degree of color misregistration based on known dimensions of the registration patch (Col 17, Rows 15-20) and an amount of color shift between the detected color value (Col 17, Rows 1-14 and 39-44. Color values are measured in term of wavelength with metric unit of nano-meter whereas color spectrum runs from 400 nm which represent the color value of violet to 700 nm which represents the color value of red) and a calculated or selected color value (Col 13, Rows 31-35, color correction technique such as that of *Castelli*).

Regarding Claim 7, *Castelli* discloses the method for detecting color misregistration further comprising performing an adjustment operation if it is determined that an unacceptable level of color misregistration has occurred (Col 6, Rows 22-27, calibration of output is performed to assure color constancy).

Regarding Claim 8, *Castelli* discloses an image forming system capable of detecting and adjusting for color misregistration comprising:

a plurality of image forming stations, each image forming station forming an image in one color (Fig 6, Development Stations C and D);

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a charge retentive surface which receives each image from its corresponding image forming station and transfers the combined image to a recording medium (**Fig. 6, belt 10, and see Col 4, Rows 25-30**);

a spectrophotometric device either attached to or integral to the image forming system (**Col 6, Rows 61-64, spectrophotometer connected via neural networks and Col 6, Rows 9-16, the main sensor of the invention is integral to the image forming system**);

and a controller that causes the spectrophotometric device to perform detection of color misregistration on at least one registration patch (**Fig. 7, Controller**).

Castelli does not disclose determining if color misregistration has occurred based on a detected color value detected by the spectrophotometric analysis of the registration patch.

Hubble discloses detection of color misregistration (**Fig 1, color misregistration being measured by a spectrophotometer 12**) is based on a color value (**Col 17, Rows 1-14 and 39-44. Color values are measured in term of wavelength with metric unit of nanometer whereas color spectrum runs from 400 nm which represent the color value of violet to 700 nm which represents the color value of red**) detected by a spectrophotometric device.

It would've been obvious to one of ordinary skill in the art at the time of the invention to use the spectrophotometer of *Hubble* as the primary sensor of *Castelli* whereas the motivation would've been to provide an improved spectrophotometer for non-contact measuring of the colors of colored target areas or test/registration patches (*Hubble, Abstract*).

Regarding Claim 9, *Castelli* discloses the controller further implements an adjustment to reduce detected misregistration (**Col 6, Rows 22-27**).

Regarding Claims 10-13, *Castelli* discloses each elements of Claim 9 from which Claims 10-13 are dependent upon. Furthermore, *Castelli* discloses that the image forming system is an imaging system that is used to produce color outputs (**Fig. 6, printing machine and Col 4, Rows 5-10**). However, *Castelli* does not explicitly disclose that the printing machine is a digital photocopier, an ink jet printer, or a laser printer. Nonetheless, the cited printing machines are well known species of genus printing machines. Therefore, it is well within the knowledge of one ordinarily skilled in the art to use the above-mentioned copiers and printers as the image forming system because each of said copiers and printers are qualified to perform superbly in the endeavor of color printing and they are all very well known under the sun.

It would've been obvious to one ordinarily skilled in the art at the time of invention to use either a digital photocopier, an ink jet printer, a laser printer, a facsimile machine, or a combination facsimile machine and printer machine as the printing machine of *Castelli* in order to enable the printing of multi-color images from which spectrophotometric analysis can be performed.

Regarding Claim 14, *Castelli* discloses the registration patch is formed in a combination of colors having a composite color value equivalent to a pre-calculated or pre-selected combined color value. (**Col 6, Row 67 – Col 7, Row 2, colors are selected to adequately represent the printer's collection of colors and see Column 6, Rows 30-55 where composite colors cyan and magenta are anticipated to be part of the groups of**

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colors that needed to be analyzed. Therefore, if there exist devices to analyze composite colors, then that means patches are formed from these colors).

Regarding Claims 15 and 16, *Castelli* discloses the controller further implements an output signal which indicates the results of the detection of the color misregistration (**Fig 7, Controller, and see Col 3, Rows 34-40 first/second/third detectors being controlled to perform spectrophotometric analysis and see Col 7, Rows 1 –31, a factory calibration process is performed to correct any error whereas such process is impossible without a signal indicating the necessity of said process**) and output signal indicates whether the image forming system is performing within satisfactory limits (**Col 6, Rows 22-27, the results as indicated by the output signal is used to calibrate the printer of interest with the mapping to absolute or desired color coordinates**).

Regarding Claim 19, *Castelli* discloses at least one adjustment operation (**Col 6, Rows 17-30, calibration operation**) wherein the adjustment operation is able to alter an image forming process of at least one of the plurality of image forming stations (**Fig 6, Development Stations C and D**) if a spectrophotometric analysis indicates color misregistration has occurred (**Col 6, Rows 17-30, instruments are calibrated in response to any color inconsistency to ensure constant color**).

Regarding Claim 20, *Castelli* discloses an apparatus comprising:

means for forming images (**Col 4, Rows 5-7, an imaging system**);

means for creating at least one registration patch (**Col 6, Rows 65-67, a number of patches**);

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means for performing spectrophotometric analysis on the at least one registration patch to determine if color misregistration is occurring on images formed by the means for forming images (**Col 3, Rows 34-40 and Col 6, Rows 61-63**);

means for determining if color misregistration has occurred based on the spectrophotometric analysis of the registration patch (**Col 6, Rows 10-30**);

means for adjusting the image forming process to adjust for the color misregistration (**Col 6, Rows 22-27**).

Castelli does not disclose means for determining if color misregistration has occurred based on the spectrophotometric analysis of the registration patch.

Hubble discloses means for determining (**Fig 1, color misregistration being measured by a spectrophotometer 12**) if color misregistration has occurred based on a color value (**Col 17, Rows 1-14 and 39-44. Color values are measured in term of wavelength with metric unit of nano-meter whereas color spectrum runs from 400 nm which represent the color value of violet to 700 nm which represents the color value of red**) detected by a spectrophotometric analysis of a registration patch.

It would've been obvious to one of ordinary skill in the art at the time of the invention to use the spectrophotometer of *Hubble* as the primary sensor of *Castelli* whereas the motivation would've been to provide an improved spectrophotometer for non-contact measuring of the colors of colored target areas or test/registration patches (*Hubble*, **Abstract**).

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5. Claims 6 and 18 are rejected under 35 USC 103(a) as being unpatentable over the combined teaching of *Castelli et al. (US 5748221 A)* in view of *Hubble, III et al (US 6384918 B1)* and *Uchida et al. (US 4816844 A)*.

While *Castelli* and *Hubble* discloses the method and apparatus of Claim 1 and Claim 9 respectively, and the step of forming a registration patch comprises forming a registration patch which has at least two superimposed colors (*Castelli*, Col 6, Rows 30-55), *Castelli* does not disclose that the colors form a line in perpendicular to a direction of color misregistration.

Uchida discloses a registration patch with a line (Fig. 5A-C, and see Col 3, Rows 35-55, magenta and cyan) perpendicular to a direction of color misregistration.

Therefore, it would've been obvious to one ordinarily skilled in the art at the time of invention to form two superimposed colors in a line that is perpendicular to the direction of misregistration in order to discover any deviation that is attribute to a difference or differences in the time periods required for the transfer material to move between adjacent image forming stations (*Uchida*, Col 3, Rows 47-50) so that the fourth detector of *Castelli* (*Castelli*, Col 3, Rows 40-42) can properly determine when to initiate spectrophotometric analysis.

Conclusion

6. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the


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mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to King Y. Poon whose telephone number is 571-272-7440 and Richard Z. Zhu whose telephone number is 571-270-1587. The examiners can normally be reached on M-F, 8:00 - 4:30.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RZ²
09/27/2007


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